

Data Collaboration with marinetraffic.com for Remote Monitoring of Port Operations using AIS

INTRODUCTION

The Automatic Identification System (AIS) technology has developed from a simple navigational and situational awareness tool designed to improve safety at sea to become the backbone of a global ship tracking network. Today, over half a million vessels use AIS to transmit their location, which is collected by a network of receivers deployed in over 140 countries and 40 million users track vessels annually through the MarineTraffic platform alone.

AIS no longer merely helps to protect sailors. As the network of receivers grows and methods of analysis become increasingly sophisticated, AIS data is able to provide ever-more accurate and valuable information to a variety of users; from helping maritime businesses increase efficiency to allowing financial analysts and hedge funds to monitor global commodity flows.

BACKGROUND AND PROBLEM:

The concept and drive to implement an Automatic Identification System (AIS) for Vessels at the Base Port of Surigao, as well as other ports under the jurisdiction of the Port Management Office of Surigao (PMO Surigao), originated from the search, rescue, and recovery operations carried out after the tragic sinking of M/V Maharlika II off Pintuyan in Southern Leyte on September 13, 2014. The vessel was en route from the Lipata Ferry Terminal to the Port of Liloan when the incident occurred.

Witnessing the remarkable impact of AIS during the search and rescue efforts for MV Maharlika II, the officials of PMO Surigao recognized the immense advantages of installing shore-based stations at strategic locations within PMO Surigao's Area of Operations (AOR).

The Port Management Office of Surigao oversees several privately owned mining ports situated in the provinces of Surigao del Norte, Surigao del Sur, and Dinagat Islands. Most, if not all, of these private ports are situated at a considerable distance from the Terminal Management Offices of the Philippine Ports Authority (PPA) in the respective areas. Moreover, mineral products intended for export are often loaded at anchorage points. Due to limited manpower, PMO Surigao face challenges in physically verifying the claims made by shipping agents regarding the duration of port stays. However, with access to the marinetraffic.com AIS network, the PMO now possesses a foolproof method to accurately determine a vessel's actual arrival and departure times, based on the ship's movements as tracked by the AIS.

SOLUTION AND IMPACT:

Due to a shortage of manpower for verifying port stays of vessels engaged in loading operations at anchorage, collecting accurate port charges that correspond to the actual port stays has always been a significant challenge. The Port Management Office (PMO) has been left with no alternative but to accept the claims made by shipping agents without any means of verification.

However, a significant breakthrough has been achieved with the establishment of an AIS Station at the Port of Surigao. The PMO Surigao has connected this station to marinetraffic.com, a global network of AIS stations. This web portal offers various features, one of which includes access to its extensive database of track movements spanning sixty days. It should be noted that marinetraffic.com diligently logs a vessel's track and stores it in its voyage history database.

With access to Marine Traffic's voyage history database, the PMO now possesses a reliable tool to accurately determine the actual port stay of a vessel, from its entrance to departure. This invaluable resource enables the PMO to collect the appropriate port charges based on factual data. It is worth emphasizing that a single day's port charges typically amount to around P50,000.00 to 70,000.00, making it crucial to ensure that the correct charges are levied.

By leveraging the capabilities of marinetraffic.com and utilizing its voyage history database, the PMO Surigao has overcome the challenges of manpower limitations and established a more efficient and transparent system for port charge collection. This development not only brings financial benefits to the port but also ensures fairness and accuracy in the assessment of charges, benefiting both the shipping agents and PMO Surigao

ABBREVIATION AND TERMINOLOGIES:

AIS – Automatic Identification System

PPA – Philippine Ports Authority

PMO – Port Management Office

MARINA – Maritime Industry Authority

AtoN – Aid to Navigation

VTMS – Vessel Traffic Management System

TMO – Terminal Management Office

NOA – Notice of Arrival

EXTENT THE DATA COLLABORATION PROJECT IS APPLIED:

By implementing this practice, PMO Surigao not just facilitates but also guarantee the accurate collection of port charges. This has resulted in improved efficiency in revenue collection, benefiting not only our organization but also the wider public who rely on the Philippine port system for transportation, trade, and commerce.

Furthermore, the establishment and maintenance of an AIS (Automatic Identification System) station aligns with PMO Surigao's mandate to promote secure navigation. Through continuous monitoring of harbor traffic, the PMO contributes to enhancing safety measures. Moreover, the Port of Surigao's AIS station plays a crucial role during search and rescue operations, serving as a valuable resource for partner agencies like the Philippine Coast Guard and the Maritime Industry Authority. This collaboration ensures that the PMO fulfills its duty to prioritize safety and provide support in critical situations.

The use of AIS as an AtoN can provide the following services to AIS equipped vessels:

- Provide identification of the AtoN in all weather conditions such as buoys, major floating aids;
- Complement existing signals from AtoN (e.g. AIS equipped lighthouse);
- Transmit accurate positions of floating AtoN;
- Provide weather, tidal, and sea state data

Furthermore, ports of the PPA (Philippine Ports Authority) located along the Pacific Seaboard can serve as invaluable "Ports of Refuge" during severe weather conditions, offering a safe haven for vessels seeking shelter.

The implementation of the AIS data collaboration project has significantly enhanced the capabilities of the Port of Surigao. It now has the ability to accurately detect and monitor specific vessels and their activities within its vicinity. This advanced tracking system is particularly beneficial for ports situated in critical border areas, such as the government ports along Mindanao's Pacific (eastern) seaboard. By leveraging AIS, these ports can effectively conduct surveillance and monitor security situations in real-time.

Overall, the integration of AIS technology has not only improved safety measures by providing ports with the capacity to offer refuge during extreme weather but has also bolstered their ability to maintain heightened security along vulnerable coastal areas.

REGULARITY BY WHICH THE SYSTEM IS USED:

The practice of assessing port charges in response to a shipping agent's request is a regular occurrence. To ensure accuracy, the claims of port stays mentioned in the dockage report are meticulously verified using the comprehensive marinetraffic.com database. These verifications serve as the foundation for calculating the appropriate port charges. Furthermore, a diligent daily monitoring of ship traffic within the harbor is conducted.

In addition to its primary function of remotely monitoring the port stays of vessels engaged in offshore loading operations, PMO Surigao harnesses the power of the system to oversee foreign vessels within its jurisdiction. This includes monitoring vessels currently present in the PMO's area of responsibility, as well as those expected to arrive at the designated port in the PMO's jurisdiction. As a vessel files a Notice of Arrival (NOA), the designated operations officer carefully records its Estimated Time of Arrival, as well as other vital details like the ship's Length Over-all (LOA), Gross Tonnage, and other pertinent information that is automatically supplied by marinetraffic.com. Armed with this information, the PMO engages in proactive

planning, ensuring they are well-prepared to receive incoming ships efficiently and effectively.

CONSISTENCY BY WHICH THE PRACTICE IS BEING USED BY TARGET USERS:

The utilization of this data collaboration system primarily involves PPA Harbor Operations Officers and Vessel Assessment personnel. In terms of stakeholders and beneficiaries, shipping operators can greatly benefit from improved berth assignments and accurate assessments of port dues imposed on them.

The Universal Shipborne Automatic Identification System (AIS) serves as a vessel tracking system that facilitates automatic communication of navigation information between AIS-equipped vessels and coastal authorities, such as PMO Surigao, which maintains a coastal/land-based AIS Station. Vessels equipped with an AIS receiver can also gain valuable information about the whereabouts and intentions of other ships. AIS serves as a valuable tool for enhancing safety and avoiding collisions at sea.

Through the integration of the Port of Surigao's AIS station with marinetraffic.com, real-time tracking of any vessel monitored by any AIS station registered with marinetraffic.com became possible. Currently, Surigao station is a registered receiver (ID no. 1228) with marinetraffic.com. As an example, a vessel transporting heavy equipment from China to Surigao can be tracked during its approach and berthing, even a day before its arrival. Marine Traffic AIS data provides precise details about its exact position, arrival draft, cargo contents, and more. Harbor Pilots can also benefit from advanced information provided by AIS data provided by Marine Traffic.

BASELINE DATA:

Despite being in operation since 2015, the Data Collaboration Agreement established between PMO Surigao and marinetraffic.com has emerged as an invaluable asset, particularly during the peak of the pandemic between 2020 and 2022. This period severely restricted the movement of personnel and forced PMO Surigao to heavily rely on remote monitoring systems. By leveraging the real-time information provided by marinetraffic.com, the world's leading maritime analytics provider, PMO Surigao was able to accurately monitor the duration of foreign vessels' port stays at private ports and ensure the correct collection of port charges.

Thanks to this collaboration, PMO Surigao not only managed to surpass revenue targets in 2020 but also achieved its highest annual income since its establishment in 1977, reporting earnings of PhP622,671,319.54. This represents an impressive 7% increase compared to the previous year's collections and a remarkable 15% increase from the revenue target. In 2021, PMO Surigao continued to deliver outstanding financial results by surpassing the previous year's collections by an additional 3%.

While revenue collections for 2022 still exceeded PhP600 million, the mining industry faced challenges such as higher production costs due to inflation, particularly in fuel expenses, and reduced output caused by inclement weather. These factors impacted mining operations and led to a decrease in activities related to the exportation of mineral products.

It can be argued that the verification process facilitated by the AIS/marinetraffic.com system significantly contributed to the improved collection efficiency of the PMO, accounting for approximately 80% of its annual income derived from revenues collected from private port operations. This demonstrates the importance of relying on accurate and real-time information rather than solely depending on shipping agents' provided data.

PROJECT'S CONTRIBUTION TO THE PRODUCTIVITY OF THE ORGANIZATION:

The practice of utilizing the system offers significant advantages in enhancing collection efficiency, leading to a substantial growth in income that greatly benefits the government's fiscal position. Specifically, for the assessment personnel responsible for port charges at PMO Surigao, the system serves as an invaluable tool, ensuring the accurate collection of appropriate port charges.

Furthermore, the PMO's operations personnel also reap the rewards of this system by gaining access to a dependable and efficient tool for remotely monitoring the operations of private ports. With online access to AIS data, they can effectively oversee and manage the activities taking place in these ports, enabling better control and informed decision-making.

IMPACT OF THE PROJECT:

PMO Surigao leverages Automatic Identification System (AIS) technology to effectively monitor maritime traffic within its designated area of responsibility. However, in order to obtain a comprehensive global overview, millions of users depend on maritime tracking intelligence providers such as MarineTraffic and its competitors. These platforms grant online access to AIS data, enabling port authorities to monitor vessel operations within their jurisdictional ports.

On the other hand, AIS data serves vessel operators in various ways. They can utilize this information to oversee and manage their fleets, establish connections with suppliers and service providers to explore new business opportunities, and allow crew members to be tracked by their families and friends.

The processed AIS data holds immense value for a wide range of maritime professionals, including port authority managers, analysts, insurers, researchers, and regulatory bodies. By analyzing and interpreting this data, these professionals can gain valuable insights and information pertinent to their respective roles and responsibilities.

COMPARISON WITH OTHER SYSTEMS AS PRACTICED IN OTHER PORTS OF THE PPA:

The integration of Automatic Identification System (AIS) with Radar Systems in Vessel Traffic Management Systems (VTMS) has found widespread application in the Philippine Ports

Authority's (PPA) major gateway ports, including the Port of Manila and Port of Batangas. However, to the best of our knowledge, the application of AIS data for remote monitoring of vessel port stays and its subsequent utilization in the computation and assessment of port charges was first implemented at the Port of Surigao. While technical personnel from other PPA offices have shown interest and even visited to witness the system in operation, we lack comprehensive information regarding its implementation elsewhere.

At present, the utilization of online AIS data, specifically from marinetraffic.com, serves as an internal tool within PMO Surigao's organization and its network of shipping agents and port users. Regrettably, this practice has not been formally publicized or widely disseminated.

SUSTAINABILITY AND NEXT STEPS:

PMO Surigao is actively planning to expand its AIS shore-based stations, with a focus on two key locations: the Port of Dapa in Siargao Islands and the Port of Hayanggabon in Claver, Surigao del Norte. The strategic placement of the Port of Hayanggabon in the Claver-Carrascal Mining Corridor.

Currently, PMO Surigao has taken a proactive step by sharing valuable data with other PMOs under the Philippine Ports Authority. Such initiative aims to foster cooperation and inspire them to undertake similar endeavors. By encouraging collaborative efforts, PMO Surigao envisions the Data Collaboration Project as a catalyst for future schemes that will greatly benefit the maritime industry.

The principal goal of PMO Surigao's future development endeavors is to establish a robust framework for collaboration and innovation within the maritime industry – as exemplified by the Data Collaboration Project with Marine Traffic. By leveraging emerging technologies and fostering information sharing, PMO Surigao aims to create an ecosystem that maximizes the potential of the maritime sector in the region. This approach aligns with broader objectives to drive sustainable growth, enhance operational efficiency, and ensure the long-term viability of the maritime industry in the Philippines.

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